CLAIMS:

1. An antenna system for a transmitter comprising:

a plurality of antennas defining a respective plurality of fixed beams which together cover a coverage area;

for each antenna a respective signal generator generating a respective signal comprising a common overhead component common to all the signals;

transceiver circuitry connecting the signal generators to the antennas such that a respective one of the signals is transmitted by each antenna;

wherein the each pair of signals transmitted on an adjacent pair of said antennas has a respective mutual micro-timing offset which is large enough that destructive cancellation substantially does not occur between the pair.

2. An antenna system according to claim 1, implemented for a plurality of coverage areas, each coverage area being a respective sector served by the base station.

3. A system according to claim 1 wherein the transmitter is a CDMA base station, and each signal is a CDMA signal.

4. A system according to claim 2 wherein the transmitter is a CDMA base station, and each signal is a CDMA signal.

5. A system according to claim 4 wherein the respective mutual micro-timing offset is small enough that substantially no signal source ambiguity occurs at a receiver.

6. A system according to claim 4 wherein:

the sector has a sector-specific spreading code, and wherein the respective mutual micro-timing offset between each

pair of CDMA signals is realized by applying the sector-specific spreading code with a respective mutual micro-offset.

7. A system according to claim 6 wherein the sector-specific spreading code is a PN code.

8. A system according to claim 7 wherein each mutual micro-offset is at least one chip and less than eight chips.

9. A system according to claim 7 wherein each mutual micro-offset is half a width of a traffic search less than a window/space implemented in a mobile terminal community with the base station.

10. A system according to claim 4 wherein the sector-specific code is a short code having a sector specific offset used to distinguish between other sources using the same short code, and wherein the respective mutual micro-timing offset is small enough that substantially no ambiguity between different sector specific offsets occurs at a receiver in respect of any pair of signals transmitted by adjacent antennas.

11. A system according to claim 10 wherein the short code is of length 2^15-1.

12. A system according to claim 4 wherein:

the sector has a sector-specific spreading code, and wherein the respective mutual micro-timing offset between each pair of CDMA signals is realized by applying the sector-specific spreading code and then applying a mutual micro-timing offset.

13. A system according to claim 4 wherein:

the sector has a sector-specific spreading code, and wherein the respective mutual micro-timing offset between each

pair of CDMA signals is realized by applying the micro-timing offset to respective sector-specific spreading code generators.

14. A system according to claim 12 wherein the sector-specific spreading code is a PN code.

15. A system according to claim 4 wherein the common overhead component comprises at least one of pilot channel, sync channel, paging channel, quick paging, advanced access channel and auxiliary pilot.

16. A system according to claim 4 further comprising:

for each active user located within the sector, at a given instant only one of the CDMA signals includes a user-specific traffic component generated by the respective CDMA signal generator.

17. A system according to claim 4 wherein the one of the CDMA signals to include the user-specific traffic component for a given user is identified by analyzing signal strength on reverse links from the user, and selecting the CDMA signal corresponding with the reverse link having a best signal strength.

18. A system according to claim 1 wherein the transceiver circuitry is further adapted to provide transmit frequencies in a manner such that the transmit frequencies include a frequency offset from one another.

19. A system according to claim 18 comprising a beam-forming matrix.

20. A system according to claim 19 wherein the beam-forming matrix is a Butler matrix.

21. A system of claim 18 wherein the frequency offset is chosen to further reduce undesirable effects of signal cancellation.

22. A system according to claim 18 wherein the signals have unique traffic channels.

23. A system according to claim 22 wherein the frequency offset is a multiple other than that of the frame rate.

24. A system according to claim 18 wherein the frequency offset is greater than 30 Hz and less than 120 Hz.

25. A system according to claim 1 further comprising:

means in the transceivers for providing transmit phases that include a time dependent phase offset from one another, wherein the phase offset is chosen to reduce undesirable effects of signal cancellation.

26. A method in a CDMA antenna system comprising transmitting signals each having a common overhead component on a plurality of adjacent beams of a sector with a micro-timing offset between signals transmitted on adjacent pairs of beams which is large enough that destructive cancellation substantially does not occur between the pair of beams.

27. A method according to claim 26 wherein the sector has a sector-specific spreading code, and wherein the respective mutual micro-timing offset between each pair of CDMA signals is realized by applying the sector-specific spreading code with a respective mutual micro-offset.